Kim Named USACE and ERDC Researcher of the Year

By Amanda Ehmann

Dr. Byung J. Kim, CERL, has received the coveted Researcher of the Year Awards from both the Army Corps of Engineers and the Engineer Research and Development Center (ERDC). He is recognized for his design and development of an innovative biofilter that destroys hazardous air emissions.

Hazardous air emissions, containing numerous hazardous air pollutants (HAPs), are created through industrial processes at Army installations. These HAPs are generally removed by activated carbon, which produces new pollutants in the form of spent carbon. The biofilter is a cost-effective alternative treatment that converts HAPs into benign carbon dioxide and water.

Kim's innovative Rotating Drum Biofilter is the "first mechanized design in the world" and has introduced major improvements to the existing biofilter design. The new device improved treatment efficiency by distributing air pollutants, oxygen, nutrients, and moisture evenly to a biological film. Kim's design also prevents clogging in the media and prolongs reliability by a rotating polyurethane foam drum that creates natural friction between the biological film and water.

The Rotating Drum Biofilter is currently being fielded at Fort Hood, Tex.. The system's efficiency is being demonstrated as it treats the toxic air streams generated by paint booths during aircraft wing refurbishment. Kim states, "the next step is to commercialize [the biofilter] for odor control and volatile organic compounds," and he is currently working with the private sector to do so.

Installations such as Army Ammunition Plants, Army Depots, and Army Arsenals can greatly benefit from the efficiency of treatment, low operation costs, and reliability of this new air treatment biofilter. These benefits previously were demonstrated at the Iowa Ammunition Plant.

Kim has been with ERDC-CERL for 18 years. He is a senior Project Manager in the Environmental Processes Branch, where he contributes to mitigating pollution from Army industrial operations.

Kim received a bachelor's degree in Civil Engineering from Seoul National University, Korea. He earned his Ph.D. in Civil and Environmental Engineering from Polytechnic University, N.Y. He is an active member of the Air and Waste Management Association, the Water Environmental Federation, the American Water Works Association, the International Water Association, and the American Academy of Environmental Engineering. Kim is also a registered Professional Engineer in New York State. For recreation, he has been an active participant in the CERL early bird tennis games for 18 years.

Recently Kim also won a Superior Civilian Service Award, and during the past year was promoted to DB-5. LTG Carl Strock presented the Corps Researcher of the Year Award at the Senior Leadership Conference in Grapevine, Tex.

Rotating Drum Biofilter

Amanda Ehmann is a student contractor at CERL